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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,452	03/19/2004	Russell Rapport	21260-021001	7279
26201 7590 07/12/2007 FISH & RICHARDSON P.C. P.O BOX 1022 Minneapolis, MN 55440-1022			EXAMINER AYCHILLHUM, ANDARGIE M	
			ART UNIT 2841	PAPER NUMBER
			MAIL DATE 07/12/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/804,452

Applicant(s)

RAPPORT ET AL.

Examiner

Andargie M. Aychillham

Art Unit

2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) 1-5, 7-12 and 32-50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 6 and 13-31 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
- Paper No(s)/Mail Date See Continuation Sheet.

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

Continuation of Attachment(s) 3. Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :4/26/04, 1/7/05, 8/15/05 and 5/18/07 .

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of: "claims 13-31" in the reply filed on October 2, 2006 is acknowledged. The traversal is on the ground(s) after consideration applicant argument and the restriction requirement that was mailed August 30th, 2006, it appears claims 13 is dependant on claim 6, accordingly, claim 6 will be examined along with claims 13-31. However, the restriction of claims 1-5, 7-12 and 32-50 is maintained. In addition, the examiner shows burden and the restriction claims have required a separate status in the art due to distinct classification and require an independent search that at the result put a great burden to the examiner, therefore, the restriction requirement made on August 30, 2006 is deemed proper and is therefore made FINAL.

Claims 1-5, 7-12 and 32-50 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on October 2, 2006.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

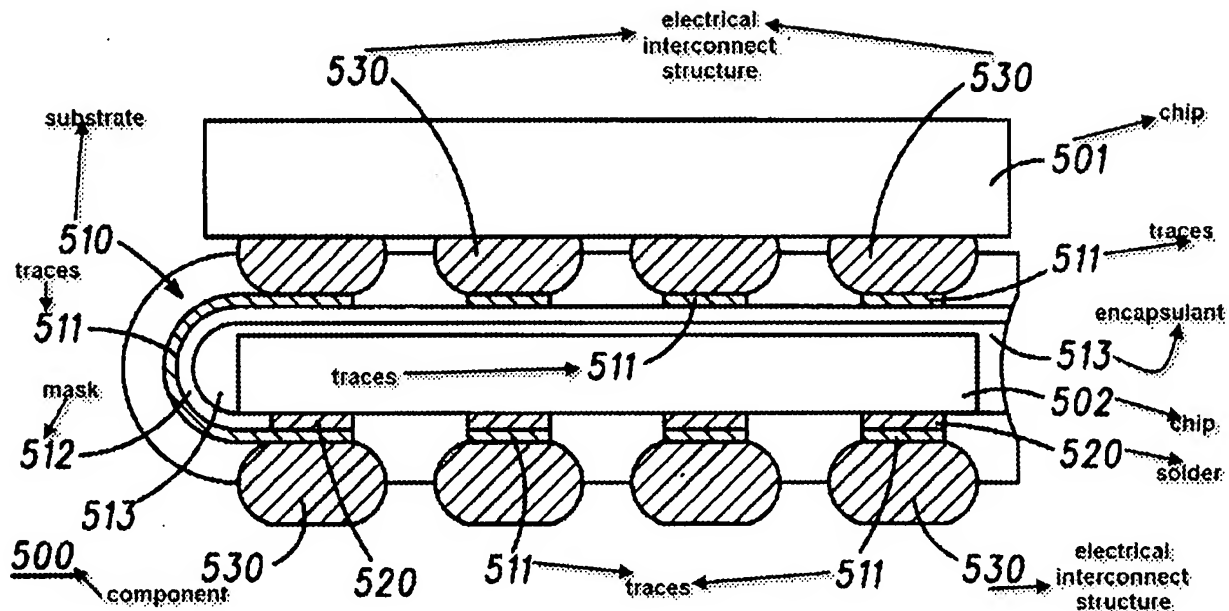
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 6 is rejected under 35 U.S.C. 102(b) as being anticipated by Mukerji et al. (U.S. 6300679).

As to claim 6, Mukerje discloses in (see fig. 5 below) a high-density circuit module comprising: a first CSP (chip 501) having an upper and lower major surface (see figure 5 below) and a set of CSP contacts (530) along the lower major surface (see figure 5 below); a second CSP (chip 502) having first and second lateral edges and upper and lower major surfaces (see figure 5 below) and a set of CSP contacts (520) along the lower major surface, the first and second lateral edges delineating an extent of the upper major surface of the second CSP (502);

A form standard (mask 512) disposed above the upper surface of the second CSP (502); and flex circuit (comprising element 510, 511).



Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 13-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukerji et al. (US 6,300,679) in view of Karabatsos (US 6,266,252).

Pertaining claim 13, Mukerji et al. discloses a high-density circuit module devised in accordance with claim 6, (see figure above). The first and second integrated circuits **/(stack multiple die/components 700, 800, 900 similar to component 500 of fig. 5)**

However, Mukerji et al. does not specifically disclose the memory expansion board; and a switching multiplexer mounted on the memory expansion board, the switching multiplexer for switching data lines; and

a decode logic circuit for decoding chip selection signals from a control circuit and providing a switching multiplexer control signal.

Karabatsos, from the same field of endeavor as Mukerji et al. discloses the memory expansion board **(10)** (see fig. 1), and a switching multiplexer **(24)** mounted on the memory expansion board **(10)**, the switching multiplexer **(24)** for switching data lines (column 6, lines **7-21**); and

Decode logic circuit **(26)** for decoding chip **(A or B)**, (see fig. 1) selection signals (column 8, lines **29-34**) from a control circuit and providing a switching multiplexer **(24)** control signal (column 7, lines **29-37**).

Since both Mukerji et al. and Karabatsos teach a dimensional flexible assembly of integrated circuit, method of fabricating the assembly of circuits including a folded flexible substrate with integrated circuit chip, furthermore a method and system for enhancing memory speed and capacity utilizes a set of electronic switches to select a proper termination chip for the computer system bus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have a memory expansion board and a switching multiplexer for switching data lines and decode logic circuit for decoding chip selection signals from a control circuit and providing switching multiplexer control signal mounted on the expansion board of Karabatsos in the Mukerji et al. flexible substrate for packaging a semiconductor component in order to provide an high-speed RAM memory for use in computer systems without sacrificing capacity, or alternatively, to provide a high-capacity memory without sacrificing speed.

Pertaining claim 14, Mukerji et al. discloses a high-density circuit module devised in accordance with claim 6, (see figure above), and one of the plural integrated circuits **/(stack multiple die/components 700, 800, 900 similar to component 500 of fig. 5)**

However, Mukerji et al. does not disclose a switch for connecting a datapath;

A decode logic for generating a control signal that causes the switch to connect the datapath and a combination signal comprised of a clock signal and a chip select signal.

Karabatsos, from the same field of endeavor as Mukerji et al. discloses a switch (24) for connecting a datapath (column 6, lines 23-35); and

A decode logic (26) for generating a control signal (column 7, lines 29-37) that causes the switch (24) to connect the databath (column 6, lines 23-35) and a combination signal comprised of a clock signal and a chip select signal (column 6, lines 7-11).

Since both Mukerji et al. and Karabatsos teach a dimensional flexible assembly of integrated circuit, method of fabricating the assembly of circuits including a folded flexible substrate with integrated circuit chip, furthermore a method and system for enhancing memory speed and capacity utilizes a set of electronic switches to select a proper termination chip for the computer system bus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have a decode logic for generating a control signal that causes the switch to connect the databath and a combination signal comprised of a clock signal and a chip select signal of Karabatsos in the Mukerji et al. flexible substrate for packaging a semiconductor component in order to provide an high-speed RAM memory for use in computer systems without sacrificing capacity, or alternatively, to provide a high-capacity memory without sacrificing speed and control and timing signals are applied to the control logic and timing generator to provide the necessary control and timing function for the DRAM (a type of random access memory that stores each bit of data in a separate capacitor).

Pertaining claim 15, Mukerji et al. discloses a high-density circuit module devised in accordance with claim 6, (see figure above), the high-density circuit module (see figure above), and which plural integrated circuits **/(stack multiple die/components 700, 800, 900 similar to component 500 of fig. 5).**

Pertaining claim 16, Mukerji et al. discloses a high-density circuit module devised in accordance with claim 6, (see figure above), the high-density circuit module (see figure above), and which plural integrated circuits **/(stack multiple die/components 700, 800, 900 similar to component 500 of fig. 5).**

However, Mukerji et al. does not disclose plural memory expansion boards. Plural multiplexers mounted upon each of the plural memory expansion boards, the plural multiplexers for making connections between a datapath;

Decode logic on each of the plural memory expansion boards, the decode logic for generating a control signal in response to a combination signal comprised of a clock signal and a chip select signal, the control signal causing at least one of the plural multiplexers to connect a particular datapath;

Karabatsos, from the same field of endeavor as Mukerji et al. discloses plural memory expansion boards **(10, 12 and 14).**

Plural multiplexers (column 6, lines 23-35) mounted upon each of the plural memory expansion boards **(10, 12 and 14)**, the plural multiplexers for making connections between a datapath (column 6, lines 23-35); and

Decode logic (26) on each of the plural memory expansion boards (10, 12, and 14), the decode logic (26) for generating a control signal (column 7, lines 29-37) in response to a combination signal comprised of a clock signal and a chip select signal (column 6, lines 7-11), the control signal (column 6, lines 7-11) causing at least one of the plural multiplexers (column 6, lines 23-35) to connect a particular datapath (column 6, lines 23-35);

Since both Mukerji et al. and Karabatsos teach a dimensional flexible assembly of integrated circuit, method of fabricating the assembly of circuits including a folded flexible substrate with integrated circuit chip, furthermore a method and system for enhancing memory speed and capacity utilizes a set of electronic switches to select a proper termination chip for the computer system bus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have a decode logic for generating a control signal that causes the switch to connect the databath and a combination signal comprised of a clock signal and a chip select signal of Karabatsos in the Mukerji et al. flexible substrate for packaging a semiconductor component in order to provide an high-speed RAM memory for use in computer systems without sacrificing capacity, or alternatively, to provide a high-capacity memory without sacrificing speed and control and timing signals are applied to the control logic and timing generator to provide the necessary control and timing function for the DRAM (a type of random access memory that stores each bit of data in a separate capacitor).

Pertaining to claim 17, Mukerji et al. differ from the claimed invention by not showing the multiplexers are FET multiplexers.

Karabatsos teaches the multiplexers **(24)** are FET multiplexers (**field-effect transistor**) (column **6**, lines **23-25**).

Pertaining to claim 18, Mukerji et al. further discloses the plural high-density circuit modules are devised **/(stack multiple die/components 700, 800, 900 similar to component 500 of fig. 5)**.

Pertaining to claim 19, Mukerji et al. further discloses the plural high-density circuit modules are devised **/(stack multiple die/components 700, 800, 900 similar to component 500 of fig. 5)**.

Pertaining to claim 20, Mukerji et al. further discloses the plural high-density circuit modules are devised **/(stack multiple die/components 700, 800 of fig. 5)**.

Pertaining to claim 21, Mukerji et al. further discloses a plurality of integrated circuits/**(stack multiple die/components 700, 800, 900 similar to component 500 of fig. 5)** and high-density circuit module (see figure above) comprised of first **(700)**, second **(800)**, third **(900)**, and fourth **(500)** individual integrated circuits (see fig. **5-9**).

However, Mukerji et al. differ from the claimed invention by not showing a memory board having a board memory signal data connection that provides a connection for memory signals between memory control circuitry.

A switching multiplexer mounted on the memory board, the switching multiplexer having a set of plural input data connections, individual ones of the plural input data connections connected to provide individual data connections.

A decode logic circuit for decoding chip selection signals from a control circuit and providing a switching multiplexer control signal;

Karabatsos, from the same field of endeavor as Mukerji et al. discloses memory board (10) having a board memory signal data (column 8, lines 29-34) connection that provides a connection for memory signals between memory control circuitry (column 7, lines 29-37);

A switching multiplexer (24) mounted on the memory board (10), the switching multiplexer (24) having a set of plural input data connections (22 and 24), individual ones of the plural input data connections (22) connected to provide individual data connections. (Column 6, lines 22-35); and

A decode logic circuit (26) for decoding chip (A) selection signals from a control circuit and providing a switching multiplexer control signal (column 7, lines 29-37);

Since both Mukerji et al. and Karabatsos teach a dimensional flexible assembly of integrated circuit, method of fabricating the assembly of circuits including a folded flexible substrate with integrated circuit chip, furthermore a method and system for enhancing memory speed and capacity utilizes a set of electronic switches to select a proper termination chip for the computer system bus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have memory board having a board memory signal data connection that provides a connection for memory signals between memory control circuitry;

Pertaining to claim 22, Mukerji et al. differ from the claimed invention by not showing the switching multiplexer further comprises an output data connection connected to the board signal memory data connection.

Karabatsos, from the same field of endeavor as Mukerji et al. discloses the switching multiplexer (24) (see fig. 1), an output data connection connected to the board signal memory data connection (column 3, lines 32-54).

Since both Mukerji et al. and Karabatsos teach a dimensional flexible assembly of integrated circuit, method of fabricating the assembly of circuits including a folded flexible substrate with integrated circuit chip, furthermore a method and system for enhancing memory speed and capacity utilizes a set of electronic switches to select a proper termination chip for the computer system bus, it would have been obvious to one having ordinary skill in the art at the time the invention was to have switching multiplexer further comprises an output data connection connected to the board signal memory

data connection of Karabatsos in the Mukerji et al. flexible substrate for packaging a semiconductor component in order to provide an high-speed RAM memory for use in computer systems without sacrificing capacity, or alternatively, to provide a high-capacity memory without sacrificing speed and control and timing signals are applied to the control logic and timing generator to provide the necessary control and timing function for the DRAM (a type of random access memory that stores each bit of data in a separate capacitor).

Pertaining to claim 23, Mukerji et al. discloses first (**700**), second (**800**), third (**900**), and fourth (**500**) individual integrated circuits (see fig. **5-9**).

However, Mukerji et al. differ from the claimed invention by not showing the switching multiplexer provides selective individual connection between the board signal memory data connection.

Karabatsos, from the same field of endeavor as Mukerji et al. discloses switching multiplexer (**24**) provides selective individual connection between the board (**10**) signal memory data connection (Column **6**, lines **22-35**).

Since both Mukerji et al. and Karabatsos teach a dimensional flexible assembly of integrated circuit, method of fabricating the assembly of circuits including a folded flexible substrate with integrated circuit chip, furthermore a method and system for enhancing memory speed and capacity utilizes a set of electronic switches to select a proper termination chip for the computer system bus, it would have been obvious to one

having ordinary skill in the art at the time the invention was made to have switching multiplexer provides selective individual connection between the board signal memory data connection of Karabatsos in the Mukerji et al. flexible substrate for packaging a semiconductor component in order to provide an high-speed RAM memory for use in computer systems without sacrificing capacity, or alternatively, to provide a high-capacity memory without sacrificing speed and control and timing signals are applied to the control logic and timing generator to provide the necessary control and timing function for the DRAM (a type of random access memory that stores each bit of data in a separate capacitor).

Pertaining to claim 24, Mukerji et al. discloses first (700), second (800), third (900), and fourth (500) individual integrated circuits (see fig. 5-9).

However, Mukerji et al. differ from the claimed invention by not showing the individual connection between the board signal memory data connection and in response to the switching multiplexer control signal from the decode logic circuit.

Karabatsos, from the same field of endeavor as Mukerji et al. discloses the board signal memory (10) data connection (column 3, lines 32-54) and in response to the switching multiplexer (24) (see fig. 1), control signal (column 7, lines 29-37); from the decode logic circuit (26).

Since both Mukerji et al. and Karabatsos teach a dimensional flexible assembly of integrated circuit, method of fabricating the assembly of circuits including a folded

flexible substrate with integrated circuit chip, furthermore a method and system for enhancing memory speed and capacity utilizes a set of electronic switches to select a proper termination chip for the computer system bus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have switching multiplexer further comprises an output data connection connected to the board signal memory data connection of Karabatsos in the Mukerji et al. flexible substrate for packaging a semiconductor component in order to provide an high-speed RAM memory for use in computer systems without sacrificing capacity, or alternatively, to provide a high-capacity memory without sacrificing speed and control and timing signals are applied to the control logic and timing generator to provide the necessary control and timing function for the DRAM (a type of random access memory that stores each bit of data in a separate capacitor).

Pertaining to claim 25, the teaching of Karabastos includes the decode logic circuit (**26**) is mounted on the memory board (**10**). (See figure **1**).

Pertaining to claim 26, the teaching of Karabastos includes the high-density memory module is devised in accordance with claim 6, (**see figure 1**).

Pertaining to claim 27, Karabastos discloses Y high-density circuit modules **(stack multiple die/components 700)** and Z individual integrated circuits **(stack multiple die/components 800)**.

However, Mukerji et al. differ from the claimed invention by not showing
a memory access system comprising:

X memory expansion boards each populated, the plural multiplexers each for
selectively making connections between a datapath;

Decode logic on each of the plural memory expansion boards the decode logic
for generating a control signal in response to a combination signal comprised of a clock
signal and chip select signal, the control signal causing at least one of the plural
multiplexers to connect a particular datapath;

Karabatsos, from the same field of endeavor as Mukerji et al. discloses a
memory access system comprising:

X memory expansion boards **(10, 12, and 14)** (see figure 1) each populated, the
plural multiplexers (24) each for selectively making connections between a datapath.
(Column 6, lines **23-35**);

Decode logic **(26)** on each of the plural memory expansion boards **(10, 12, and 14)**, the decode logic **(26)** for generating a control signal (column 7, lines **29-37**) in
response to a combination signal comprised of a clock signal (column 7, lines **29-37**)
and chip select signal, the control signal (column 7, lines **29-37**) causing at least one of

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the plural multiplexers (column **6**, lines **41-52**) to connect a particular datapath (column **6**, lines **23-35**);

Since both Mukerji et al. and Karabatsos teach a dimensional flexible assembly of integrated circuit, method of fabricating the assembly of circuits including a folded flexible substrate with integrated circuit chip, furthermore a method and system for enhancing memory speed and capacity utilizes a set of electronic switches to select a proper termination chip for the computer system bus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have switching multiplexer further comprises an output data connection connected to the board signal memory data connection of Karabatsos in the Mukerji et al. flexible substrate for packaging a semiconductor component in order to provide an high-speed RAM memory for use in computer systems without sacrificing capacity, or alternatively, to provide a high-capacity memory without sacrificing speed and control and timing signals are applied to the control logic and timing generator to provide the necessary control and timing function for the DRAM (a type of random access memory that stores each bit of data in a separate capacitor).

Pertaining to claim 28, Mukerji et al. differ from the claimed invention by not showing the multiplexers are FET multiplexers.

Karabatsos, from the same field of endeavor as Mukerji et al. discloses the multiplexers (**24**) are FET multiplexers (**field-effect transistor**) (column **6**, lines **23-25**).

Since both Mukerji et al. and Karabatsos teach a dimensional flexible assembly of integrated circuit, method of fabricating the assembly of circuits including a folded flexible substrate with integrated circuit chip, furthermore a method and system for enhancing memory speed and capacity utilizes a set of electronic switches to select a proper termination chip for the computer system bus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have switching multiplexer further comprises an output data connection connected to the board signal memory data connection of Karabatsos in the Mukerji et al. flexible substrate for packaging a semiconductor component in order to provide an high-speed RAM memory for use in computer systems without sacrificing capacity, or alternatively, to provide a high-capacity memory without sacrificing speed and control and timing signals are applied to the control logic and timing generator to provide the necessary control and timing function for the DRAM (a type of random access memory that stores each bit of data in a separate capacitor).

Pertaining to claim 29, Mukerji et al. further discloses the Y high-density circuit modules/(**stack multiple die/components 700, 800, 900 similar to component 500 of fig. 5**).

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Pertaining to claim 30, Mukerji et al. further discloses the Z equals (**stack multiple die/components 700, 800, 900 similar to component 500 of fig. 5**).

Pertaining to claim 31, Mukerji et al. further discloses the Z equals (**stack multiple die/components 700 and 800**).

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andargie M. Aychillhum whose telephone number is (571) 270-1607. The examiner can normally be reached on (Mon-Fri from 8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Reichard Dean can be reached on 571-272-1984. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A.A.
July 1, 2007


DEAN A. REICHARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800